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PATENT APPLICATION

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IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

APR 2 9 2005

Inventor(s): Jia et al.

Application No.: 09/845,869

Filing Date: 04/30/2001

Title: Automatic Generation of Frames for Digital Images

Confirmation No.: 4732

Examiner: LaRose, Colin M.

Group Art Unit: 2623

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on __03/07/2005__ .

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

( ) (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)
for the total number of months checked below:

( ) one month $120.00
( ) two months $450.00
( ) three months $1020.00
( ) four months $1590.00

( ) The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **08-2025** the sum of ___**$500.00**___ . At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

(X) I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450. Date of Deposit:__04/26/2005__
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Rev 12/04 (Aplbrief)

Respectfully submitted,

Jia et al.

By _____

Robert C. Sismilich

Attorney/Agent for Applicant(s)
Reg. No. **41314**

Date: **04/26/2005**

Telephone No.: **(858) 547-9803**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	: 09/845,869	)
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Applicant	: Jia et al.	)
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Title	: Automatic Generation of Frames for Digital Images	)
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		)
TC / Art Unit	: 2623	)
Examiner	: LaRose, Colin M.	)
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Docket No.	: 10004754-1	)
Customer No.	: 022879	

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPELLANTS' APPEAL BRIEF

Sir:

Appellants are appealing from the Final Rejection of claims 1-2, 5-8, 12-17, and 19-29 in an Office Action dated 11/08/2004 and maintained in an Advisory Action dated 02/07/2005.

I. REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of

HPDC is HPQ Holding, LLC.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the real party in interest which will directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-2, 5-8, 12-17, and 19-29 are pending. All of claims 1-2, 5-8, 12-17, and 19-29 stand finally rejected. The Appellants appeal the final rejection of claims 1-2, 5-8, 12-17, and 19-29.

IV. STATUS OF AMENDMENTS

On 01/07/2005 a response after final rejection was filed that amended the specification as required by the Examiner, and requested reconsideration. No amendment was made to the claims. In an Advisory Action of 02/07/2005, the Examiner indicated that the request for reconsideration filed on 01/07/2005 had been considered and the final rejection maintained as to all pending claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter of each of the independent claims relates to automatically generating a frame for a digital image (Abstract). The frame attributes are determined according to framing rules associated with an image category to which the image has been assigned based on an analysis of the pixel data of the digital image (p.12, line 6-13). The image category corresponds to the subject matter of the digital image (p.11, lines 16-18).

In one embodiment, a first data set representing pixels of an unframed digital image is analyzed 120,126 to identify a plurality of image components each corresponding to a spatial region of the pixels (Fig. 6; p.8, line 18 – p.9, line 1; p.9, lines 13-18). The spatial region may be a two-dimensional image space or a three-dimensional color space (p.6, lines 1-4, 14-16). Each of the image components is independently analyzed 122,128 to determine a set of component characteristics for the corresponding image component (Fig. 6; p.9, lines 9-12; p.10, lines 4-7). The component characteristics may include a dominant color (Abstract). The plurality of sets of component characteristics are then collectively analyzed 130 to determine overall image characteristics that are indicative of the subject matter of the unframed image (Fig. 6; p.11, lines 1-6). The overall image characteristics are further analyzed 132 to determine an image category 32 that corresponds to the subject matter (Fig. 7; p.13, line 9 – p.14, line 2). Framing rules for the image category 32 are applied 136,138 to the overall image characteristics in order to determine 140,142,144,146 one or more frame attributes (Table I-II; Fig. 7; p.13, line 11 – p.17, line 14). Then a second data set representing pixels of the framed digital image 24 is generated 108 (Figs. 2,5; p.8, lines 3-7). This second data set defines a representation of the unframed digital image 22' surrounded by a frame 26 that has the frame attributes.

In another embodiment, an image processing apparatus 10 may include a component identifier 28, a component characterizer 30, an image characterizer 34, an image categorizer 36, framing rules associated with image categories 32, and a framed image generator 40 that are configured to perform the operations described above (Figs. 1-2; p.18, line 15 – p.19, line 10).

In a further embodiment, a program storage medium 44 may comprise different logical segments of instructions configured to perform the operations described above (Fig. 1; p.19, lines 11-14).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-2, 5-8, 12-17, 19-20, and 22-29 have been rejected under 35 U.S.C. §103(a)

as being unpatentable over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent No. 5,889,578 by Jamzadeh ("Jamzadeh '578").

Claim 21 has been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent No. 5,889,578 by Jamzadeh ("Jamzadeh '578"), and further in view of U.S. Patent No. 5,600,412 by Connors.

Claims 1-2, 5-8, 12-17, and 23-29 stand or fall together.

Claims 19-21 stand or fall together.

Claims 22 stands or falls alone.

VII. ARGUMENT

A. Claims 1-2, 5-8, 12-17, and 23-29 were improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent No. 5,889,578 by Jamzadeh ("Jamzadeh '578")

As to a rejection under §103(a), the U.S. Patent and Trademark Office ("USPTO") has the burden under §103 to establish a *prima facie* case of obviousness by showing some objective teaching in the prior art or generally available knowledge of one of ordinary skill in the art that would lead that individual to the claimed invention. *In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988)*. The Manual of Patent Examining Procedure (MPEP) section 2143 discusses the requirements of a *prima facie* case for obviousness. That section provides as follows:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure.

Appellants contend that claims 1-2, 5-8, 12-17, and 23-29 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations, and there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

1. The cited references do not teach or suggest all the limitations of Appellants' claims

Independent claim 1 recites:

1. A method for automatically generating a framed digital image, comprising:
   (a) analyzing a portion of a first data set representing pixels of an unframed digital image so as to identify a plurality of image components each corresponding to a spatial region of the pixels;
   (b) independently analyzing each of the image components to determine a set of component characteristics for the corresponding image component;
   (c) collectively analyzing the plurality of sets of component characteristics to determine overall image characteristics indicative of subject matter of the unframed image;
   (d) analyzing the overall image characteristics to determine an image category corresponding to the subject matter;
   (e) determining at least one frame attribute by applying framing rules for the image category to the overall image characteristics; and
   (f) generating a second data set representing pixels of the framed digital image, the second data set defining a representation of the unframed digital image surrounded by a frame having the at least one frame attribute. (Step designators (a)-(f) added for reference purposes)

Neither the Jamzadeh '348 reference nor the Jamzedeh '578 reference, alone or in combination, teach or suggest all the limitations of Appellants' claim 1. Furthermore, since dependent claims 2, 5-8, 12-17, and 23-29 include all the limitations of claim 1, the cited references cannot teach or suggest all the limitations of these dependent claims.

a) The Jamzadeh '348 Reference

The Jamzadeh '348 reference describes an "electrostatographic color image

production apparatus" for printing "images with border regions therebetween" which "<u>create a border color in one of the dominant colors of the multicolor image</u>" (Abstract; emphasis added). The Jamzadeh '348 reference does not suggest the need for, or use of, any image categorization scheme to create the border color for its printed images. The dominant colors of the multicolor image of the Jamzadeh '348 reference are determined by mapping the image pixel colors into regions of the RGB color space (col. 4, line 28 – col. 5, line 9; Fig. 6). The outcome of such a mapping is dependent solely on the color of the individual pixels in the image. There is absolutely no teaching or suggestion as to how the border frame color would be changed or adjusted from the dominant colors based on any image category to which the multicolor image might be assigned.

b) The Jamzadeh '348 reference has been admitted by the Office to not teach or suggest the limitations of steps (a)-(d) of Appellants' claim 1

The Office admitted that "Jamzadeh '348 is silent as to the particular analysis (i.e. the four analyzing steps) for ascertaining the image category and framing the image based on its category" (Final Office Action, p.3).

c) The Jamzadeh '348 reference does not teach or suggest the limitations of step (e) of Appellants' claim 1, either alone or in combination with the Jamzedeh '578 reference

With regard to step (e) of claim 1, the Office stated that the Jamzadeh '348 reference discloses "determining at least one frame attribute by applying framing rules to the overall image characteristics (col. 5, lines 10-13: the dominant color ("overall image characteristic") is selected for inclusion in the frame)" (Final Office Action, p.3). However, in the Response After Final, Appellants argued that the Office had not considered <u>all</u> the limitations of Appellants' step (e), which recites "determining at least one frame attribute by applying framing rules <u>for the image category</u> to the overall image characteristics" (Response After

Final, p.4). In response thereto, the Office asserted that the Jamzadeh '348 reference does categorize the image: "While Jamzadeh '348 does not explicitl (sic) state that the dominant color of an image categorizes the image, it can be interpreted as such." And "Jamzadeh '348 frames the image based on the dominant color(s) in the image. The dominant colors indicate what type of image is to be framed – a greenish image, or a more yellow image, or a mostly reddish image, etc. These are essentially 'categories' of images, and the category is determined by the dominant color or colors present in the image" (Advisory Action, p.2).

(1) The Jamzadeh '348 reference does not teach or suggest image categorization as defined by Appellants

Such a tortured interpretation of "image category" is completely different from Appellants' definition of the term, in which image category is descriptive of the <u>subject matter of the image</u>, not merely the overall image color hue (Specification, p.11, line 16 – p.12,. line 4; Table I; Claim 1, step (c)). Example image categories include subject matter such as a person's portrait, a landscape scene, a floral scene, a city scene, an industrial scene, and a nighttime scene (Specification, p.11, line 18 – p.12, line 17). The particular image category to which an image is assigned is determined from an analysis of overall image characteristics such as color temperature, contrast ratio, colorfulness, and color strength (Claim 1, steps (c)-(d); Specification, p.11, lines 1-15).

Furthermore, in light of Appellants' specification, determination of a dominant color cannot be considered as an alternative form of image categorization, but rather it is a totally separate and different operation from image categorization. In Appellants' invention, determination of a dominant color may be performed as a precursor to image categorization: "A data set for the image is analyzed ... to determine one or more <u>image components representing dominant colors</u> in the image" (Abstract). In other words, a dominant color may be one of the component characteristics recited in step (b) of claim 1 (Specification, p.10, lines 4-13). Further processing (i.e. steps (c) and (d)) are then performed in order to determine the image category.

The Jamzadeh '348 reference clearly does not perform image categorization based on

the subject matter of the image, as recited in Appellants' claim 1 and defined in Appellants' specification.

(2) In the Jamzadeh '348 reference, there is no application of framing rules for the image category to the overall image characteristics, as recited in step (e) of Appellants' claim 1

Step (e) of Appellants' claim 1 recites "determining at least one frame attribute by applying framing rules for the image category to the overall image characteristics" (emphasis added). For example, and with reference to Tables I and II, if the subject matter of the image is the portrait of a person, the framing rules specify that a "complementary" frame color (i.e. an opposite hue to the dominant color) will be chosen for the frame if the overall image has normal contrast, while a "light" frame color (i.e. the same hue as the dominant color but with increased lightness) will be chosen for the frame if the overall image has high contrast. If the subject matter is a landscape scene, the framing rules specify that a "similar" frame color (i.e. a hue adjacent in color space to the dominant color) will be chosen for the frame if the overall image is predominantly green or blue, while a "contrasting" frame color (i.e. a hue adjacent in color space to the opposite hue of the dominant color) will be chosen for the frame if the overall image is predominantly brown.

With regard to step (e), the Office states that Jamzadeh '348 discloses "determining at least one frame attribute by applying framing rules to the overall image characteristics (column 5, lines 10-13): the dominant color ("overall image characteristic") is selected for inclusion in the frame)" (Final Office Action, p.3). However, the claim limitation "for the image category" was omitted from the Office's recitation of the claim step. As argued above, Appellants contend that Jamzadeh '348 does not disclose image categories.

Therefore, the Jamzadeh '348 reference teaches or suggests nothing like the limitations recited in step (e) of claim 1. Simply put, this reference does nothing more than "create a border color in one of the dominant colors of the multicolor image" (col. 2, lines 10-12), regardless of the subject matter of the image. It is silent as to whether or how the rules for determining the border color would be adjusted or modified based on the category of an

image's subject matter.

d) The Jamzadeh '578 Reference

The Jamzadeh '578 reference is not directed to the problem of framing an image at all, but rather to "classifying ... images on a roll of film so that a photographer can describe and identify to the photofinisher the type of images of interest to the photographer and to identify which images by category on the roll of film are to receive certain customer requested procedures such as multiple prints, enlargements or no printing of that image at all" (Abstract). There is no discussion whatsoever in the reference about generating a border or frame for any of the images that are to be printed.

e) The Jamzadeh '578 reference does not remedy the deficiencies of the '348 reference in failing to teach or suggest the limitations of step (e) of Appellants' claim 1

Step (e) of Appellants' claim 1 recites "determining at least one <u>frame attribute</u> by applying <u>framing rules</u> for the image category to the overall image characteristics" (emphasis added). To whatever extent the Jamzadeh '578 reference may categorize the image, it does not teach or suggest that the image category is used to determine attributes of an image frame, such as a border color. It does not disclose the existence of framing rules. Therefore it cannot disclose the claimed limitation of applying framing rules for the particular image category to overall image characteristics in order to determine these frame attributes.

Even if the two references are properly combinable, which Appellants do not concede, the combined teachings or suggestions simply do not describe how to use image categorization as taught by the Jamezadeh '578 reference to determine frame attributes for the image that are dependent on an image category. The limitations of claim 1 are not obvious in light of the references except in hindsight, impermissibly using the teachings of Appellants' own invention. <u>*See, e.g., ATD Corporation v. Lydall, Inc., 48 USPQ 2d 1321, 1329 (Fed.*</u>

Cir. 1998) ("Determination of obviousness can not be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.")

2. The cited references are not properly combinable

The standard under which references in an obviousness rejection are properly combinable has been stated as follows:

"The invention that was made, however, does not make itself obvious; that suggestion or teaching must come from the prior art. *See, e.g., Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051-52, 5 USPQ 2d 1434, 1438 (Fed. Cir. 1988) (it is impermissible to reconstruct the claimed invention from selected pieces of prior art absent some suggestion, teaching, or motivation in the prior art to do so); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985) (it is insufficient to select from the prior art the separate components of the inventor's combination, using the blueprint supplied by the inventor); *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1556, 225 USPQ 26, 31 (Fed. Cir. 1985) (the prior art must suggest to one of ordinary skill in the art the desirability of the claimed combination)." *C.R. Bard, Inc. v. M3 Sys., Inc., 48 USPQ 2d 1225, 1232 (Fed. Cir. 1998)*

Appellants contend that the Jamzadeh '348 reference and the Jamzadeh '578 reference are not properly combinable.

a) There is no suggestion or motivation to combine the references in the references themselves

As previously recounted heretofore, the Office argues that the motivation to combine the image categorization of the Jamzadeh '578 reference with the image framing of the Jamzadeh '348 reference is that the Jamzadeh '348 reference also categorizes the image: "While Jamzadeh '348 does not explicitl (sic) state that the dominant color of an image categorizes the image, it can be interpreted as such." And "Jamzadeh '348 frames the image based on the dominant color(s) in the image. The dominant colors indicate what type of

image is to be framed – a greenish image, or a more yellow image, or a mostly reddish image, etc. These are essentially 'categories' of images, and the category is determined by the dominant color or colors present in the image."

Appellants disagree. As also explained heretofore, the term "image category", as defined in Appellants' specification, relates to the <u>subject matter</u> of the image. Nothing in the Jamzadeh '348 reference categorizes the image according to its subject matter. The reference merely determines what the dominant colors in the image are, and then "create[s] a border color in one of the dominant colors of the multicolor image" (Abstract).

In summary, the Jamzadeh '348 reference directed to image framing is silent on image categorization, while the Jamzadeh '578 reference that discloses image categorization is silent as to image framing. Therefore, there is no suggestion or motivation to combine the references in the references themselves, and thus the references are not properly combinable at least based on this ground.

b) There is no suggestion or motivation to combine the references in the knowledge generally available to one of ordinary skill in the art

A "person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art." *Custom Accessories Inc. v. Jeffrey-Allan Indus., 1 USPQ 2d 1196, 1201 (Fed. Cir. 1986)*. "Inventors, as a class, … possess something — call it what you will — which sets them apart from the workers of *ordinary* skill. *Standard Oil Co. v. American Cyanamid Co., 227 USPQ 293, 297 (Fed. Cir. 1985)*. In other words, an inventor is presumed to be a person of extraordinary skill in the art, and as such is presumed to be aware of at least all the pertinent prior art of which one of ordinary skill in the art would be aware. Therefore, if it were obvious to a person of ordinary skill to combine references, it certainly would be obvious to a person of extraordinary skill in the same art area to do so.

At the time that the patent application that eventually matured into the Jamzadeh '578 reference was filed on October 26, 1993, the Jamzadeh '348 reference had already issued as a patent on September 28, 1990, and thus was prior art. The hypothetical person of ordinary

skill would be presumed, therefore, to be aware of the Jamzadeh '348 reference, as would one of extraordinary skill. With regard to the references in this case, inventor Jamzadeh, the sole inventor of the Jamzadeh '578 reference, does not merely have constructive knowledge of the Jamzadeh '348 reference but also <u>actual</u> knowledge, because he is also a joint inventor of the Jamzadeh '348 reference. Furthermore, the Jamzadeh '578 reference cites in the specification three other related U.S. patents – 4,994,827; 5,151,717; and 5,175,628 – on which inventor Jamzadeh is a sole or joint inventor. Yet there is no mention within the four corners of the Jamzadeh '578 reference of the Jamzadeh '348 reference. Appellants believe that if it had been obvious to inventor Jamzadeh to combine the image categorization of the Jamzadeh '578 patent application with the image framing of the Jamzadeh '348 reference, the Jamzadeh '348 reference would have also been cited in the Jamzadeh '578 patent application and such a beneficial feature noted.

Appellants contend that the omission by inventor Jamzadeh in the Jamzadeh '578 reference of any reference to the Jamzadeh '348 reference is strong evidence that there was no knowledge generally available to one of ordinary skill in the art at the time Appellants' invention was made that would have suggested or motivated combining the Jamzadeh '348 reference with the Jamzadeh '578 reference. In fact, the omission of any mention of the Jamzadeh '348 reference in the Jamzadeh '578 reference teaches away from combining these references. Such a combination could be possible only in hindsight and in light of Appellants' teachings.

B. **Claims 19-20 were improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent No. 5,889,578 by Jamzadeh ("Jamzadeh '578"), and claim 21 was improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. in view of U.S. Patent No. 5,889,578 by Jamzadeh and further in view of U.S. Patent No. 5,600,412 by Connors**

Independent claim 19 recites:

19. An image processing apparatus, comprising

a component identifier adapted to receive a first data set of pixels representing an unframed digital image and identify a plurality of individual image components therefrom;

a component characterizer communicatively coupled to the component identifier for determining a set of component characteristics for each of the individual image components;

an image characterizer communicatively coupled to the component characterizer for determining overall image characteristics from the collective plurality of sets of component characteristics, the overall image characteristics indicative of subject matter of the unframed image;

an image categorizer communicatively coupled to the image characterizer for determining from the overall image characteristics an image category corresponding to the subject matter;

framing rules usable by the image categorizer to automatically define at least one frame attribute based on the image category and the overall image characteristics; and

a framed image generator for processing the first data set and the at least one image attribute so as to automatically generate a second data set having rows and columns of pixels representing a framed digital image including a representation of the unframed digital image surrounded by a visually attractive frame having the at least one frame attribute.

Dependent claims 20-21 include all the limitations of independent claim 19.

For similar reasons as argued heretofore with reference to claim 1, Appellants believe that the cited references, alone or in combination, do not teach or suggest a component identifier, a component characterizer, an image characterizer, an image categorizer, or framing rules structurally and functionally configured as in claim 19. Furthermore, since dependent claims 20-21 include all the limitations of claim 19, the cited references cannot teach all the limitations of these dependent claims.

Therefore, Appellants contend that claims 19-21 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations. Furthermore, and also as argued heretofore with reference to claim 1, Appellants believe that there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

C. **Claim 22 was improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent**

No. 5,889,578 by Jamzadeh ("Jamzadeh '578")

Independent claim 22 recites:

22. A program storage medium readable by a computing apparatus and embodying a program of instructions executable by the computing apparatus for automatically generating a visually pleasing framed digital image from an unframed digital image, the program storage medium comprising:

a first logical segment of the instructions configured to analyze a portion of a first data set representing pixels of the unframed digital image so as to identify a plurality of image components each corresponding to a region of the pixels;

a second logical segment of the instructions configured to independently analyze each of the image components to determine a set of component characteristics for the corresponding image component;

a third logical segment of the instructions configured to collectively analyze the plurality of sets of component characteristics to determine overall image characteristics indicative of subject matter of the unframed image;

a fourth logical segment of the instructions configured to analyze the overall image characteristics to determine an image category corresponding to the subject matter;

a fifth logical segment of the instructions configured to determine at least one frame attribute by applying framing rules for the image category to the overall image characteristics; and

a sixth logical segment of the instructions configured to generate a second data set representing pixels of the framed digital image, the pixels defining a representation of the unframed digital image surrounded by a frame having the at least one frame attribute.

For similar reasons as argued heretofore with reference to claim 1, Appellants believe that the cited references, alone or in combination, do not teach or suggest a program storage medium with logical segments of instructions structurally and functionally configured as in claim 22.

Therefore, Appellants contend that claims 22 was improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations. Furthermore, and also as argued heretofore with reference to claim 1, Appellants believe that there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

VIII. CONCLUSION

Appellants contend that claims 1-2, 5-8, 12-17, and 19-29 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations, and there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

Each of these reasons alone distinguishes Appellants' claims from the cited references and makes Appellants' claims non-obvious in light of the cited references.

Overruling of the Examiner's rejections of claims 1-2, 5-8, 12-17, and 19-29 is respectfully requested.

AUTHORIZATION TO PAY AND PETITION
FOR THE ACCEPTANCE OF ANY NECESSARY FEES

If any charges or fees must be paid in connection with the foregoing communication (including but not limited to the payment of an extension fee or issue fees), or if any overpayment is to be refunded in connection with the above-identified application, any such charges or fees, or any such overpayment, may be respectively paid out of, or into, the Deposit Account No. 08-2025 of Hewlett-Packard Company. If any such payment also requires Petition or Extension Request, please construe this authorization to pay as the necessary Petition or Request which is required to accompany the payment.

Respectfully submitted,

Robert C. Sismilich
Reg. No. 41,314
Attorney for Applicant(s)
Telephone: (858) 547-9803

Date: 4/26/05

Hewlett-Packard Company
Intellectual Property Administration
P. O. Box 272400
Fort Collins, CO 80527-2400

IX. CLAIMS APPENDIX

1. A method for automatically generating a framed digital image, comprising:

analyzing a portion of a first data set representing pixels of an unframed digital image so as to identify a plurality of image components each corresponding to a spatial region of the pixels;

independently analyzing each of the image components to determine a set of component characteristics for the corresponding image component;

collectively analyzing the plurality of sets of component characteristics to determine overall image characteristics indicative of subject matter of the unframed image;

analyzing the overall image characteristics to determine an image category corresponding to the subject matter;

determining at least one frame attribute by applying framing rules for the image category to the overall image characteristics; and

generating a second data set representing pixels of the framed digital image, the second data set defining a representation of the unframed digital image surrounded by a frame having the at least one frame attribute.

2. The method of claim 1, wherein the analyzing the portion of the first data set includes:

mapping the pixels to a two-dimensional image space representative of the rows and columns of the unframed image; and

selecting a region of the two-dimensional image space for each of the image components.

5. The method of claim 1, wherein the analyzing the portion of the first data set includes:

mapping the pixels to a three-dimensional color space; and

selecting a region of the three-dimensional color space for each of the image components.

6. The method of claim 5, wherein the selecting is performed in accordance with a principal component analysis technique.

7. The method of claim 1, wherein the independently analyzing further includes:
identifying at least one of a dominant color of the image component, a dominant lightness of the image component, a pixel concentration of the image component, a color space component volume of the image component, and a color space component density of the image component.

8. The method of claim 1, wherein the overall image characteristics include at least one of color temperature indicative of the warmth or coolness of the image components, contrast ratio indicative of the range of lightness values of the image components, colorfulness indicative of the amount of hue exhibited by the image components, and color strength indicative of both colorfulness and lightness of the image components.

12. The method of claim 1, wherein the image category is selected from the group consisting of portrait, landscape, floral, city, industrial, and night.

13. The method of claim 1, wherein the framing rules specify a color scheme selected from the group consisting of same, similar, progressive, complementary, contrasting, achromatic, vivid, dark, and light.

14. The method of claim 1, including:
modifying the framing rules prior to the determining.

15. The method of claim 1, including:

sending the second data set to an imaging device for producing the framed digital image.

16. The method of claim 1, wherein the representation of the unframed digital image is scaled in the framed digital image.

17. The method of claim 1, wherein the at least one frame attribute is selected from the group consisting of a border color, a border width, a border texture pattern, at least one shading color, and a number of borders per frame.

19. An image processing apparatus, comprising

a component identifier adapted to receive a first data set of pixels representing an unframed digital image and identify a plurality of individual image components therefrom;

a component characterizer communicatively coupled to the component identifier for determining a set of component characteristics for each of the individual image components;

an image characterizer communicatively coupled to the component characterizer for determining overall image characteristics from the collective plurality of sets of component characteristics, the overall image characteristics indicative of subject matter of the unframed image;

an image categorizer communicatively coupled to the image characterizer for determining from the overall image characteristics an image category corresponding to the subject matter;

framing rules usable by the image categorizer to automatically define at least one frame attribute based on the image category and the overall image characteristics; and

a framed image generator for processing the first data set and the at least one image attribute so as to automatically generate a second data set having rows and columns of pixels representing a framed digital image including a representation of the unframed digital image surrounded by a visually attractive frame having the at least one frame attribute.

20. The image processing apparatus of claim 19, further comprising:

a memory accessible by the image categorizer, the image categorizer automatically defining the at least one frame attribute in accordance with at least one framing scheme parameter stored in the memory.

21. The image processing apparatus of claim 20, wherein the memory is writeable, further comprising:

a user interface communicatively coupled to the memory for modifying the at least one framing scheme parameter.

22. A program storage medium readable by a computing apparatus and embodying a program of instructions executable by the computing apparatus for automatically generating a, visually pleasing framed digital image from an unframed digital image, the program storage medium comprising:

a first logical segment of the instructions configured to analyze a portion of a first data set representing pixels of the unframed digital image so as to identify a plurality of image components each corresponding to a region of the pixels;

a second logical segment of the instructions configured to independently analyze each of the image components to determine a set of component characteristics for the corresponding image component;

a third logical segment of the instructions configured to collectively analyze the plurality of sets of component characteristics to determine overall image characteristics indicative of subject matter of the unframed image;

a fourth logical segment of the instructions configured to analyze the overall image characteristics to determine an image category corresponding to the subject matter;

a fifth logical segment of the instructions configured to determine at least one frame attribute by applying framing rules for the image category to the overall image characteristics; and

a sixth logical segment of the instructions configured to generate a second data set

representing pixels of the framed digital image, the pixels defining a representation of the unframed digital image surrounded by a frame having the at least one frame attribute.

23. The method of claim 1, wherein the framing rules specify an intensity selected from the group consisting of normal, strong, and muted.

24. The method of claim 1, wherein the framing rules specify a texture selected from the group consisting of flat and patterned.

25. The method of claim 1, wherein the framing rules specify a dimensionality selected from the group consisting of 2D and 3D.

26. The method of claim 1, wherein, if the image category cannot be determined, determining the at least one frame attribute by applying default framing rules to the overall image characteristics.

27. The method of claim 2, wherein the region is less than the entire two-dimensional image space.

28. The method of claim 1, wherein the spatial regions of at least some of the image components have different dimensions.

29. The method of claim 1, wherein the framing rules specify a color scheme that is different from, but visually attractive with regard to, a dominant color of the unframed image.